

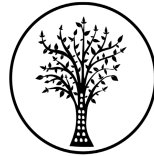
# DESKTOP HERITAGE IMPACT ASSESSMENT

In terms of Section 38(8) of the NHRA for the

**Proposed development of the Transalloys Photovoltaic (PV) Solar Energy  
Facility, Emalahleni Local Municipality,  
Nkangala District Municipality, Mpumalanga province, South Africa.**

SAHRIS Ref:

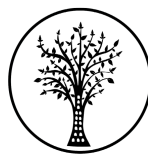
**Prepared by CTS Heritage**



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**For  
Savannah Environmental**

**June 2023**



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## EXECUTIVE SUMMARY

1. Site Name:

Transalloys Solar PV Facility

2. Location:

Schoon Gezicht 308 LS

3. Locality Plan:

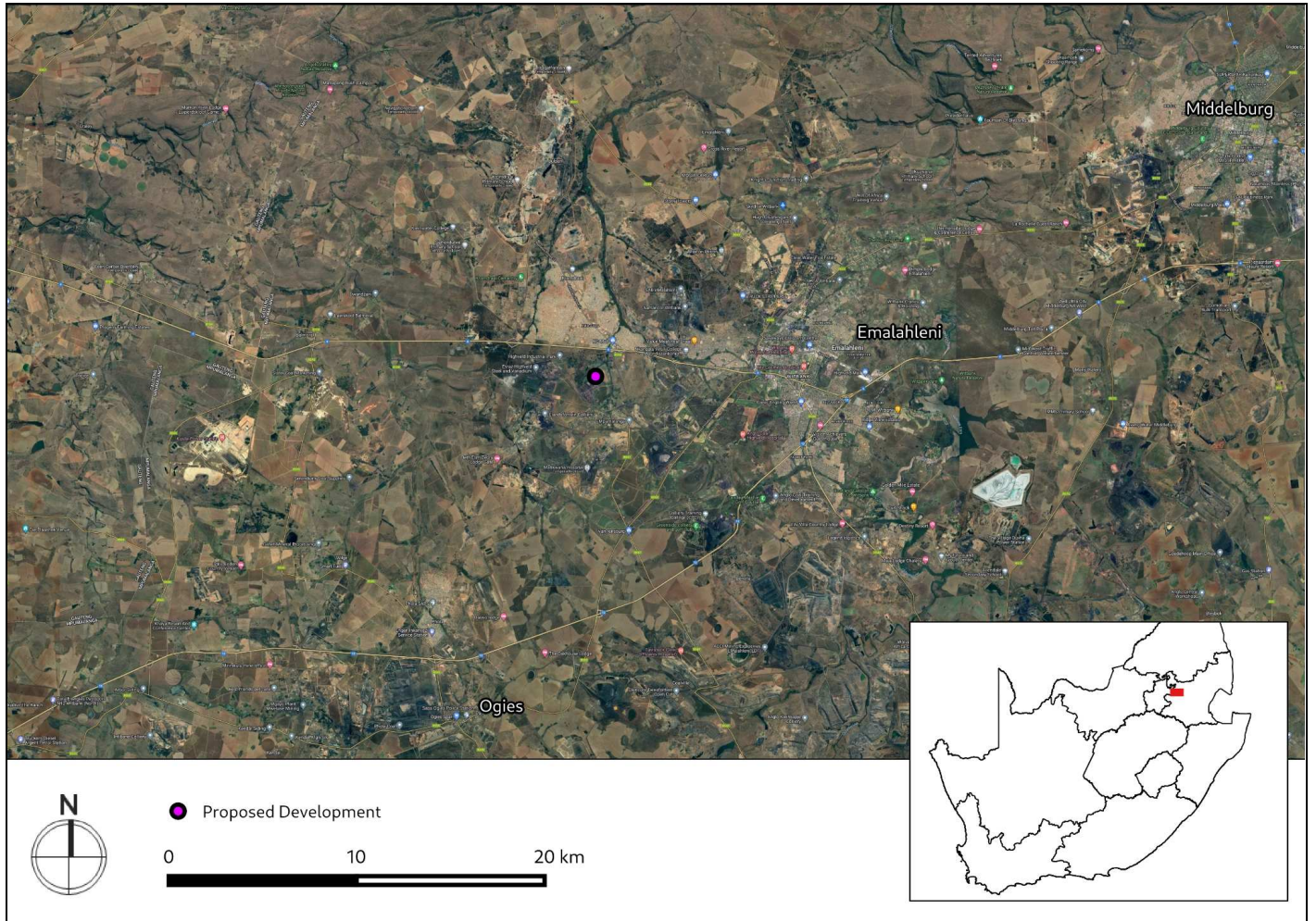
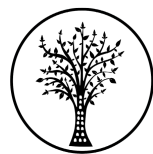


Figure 1: Location of the proposed study area



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#### 4. Description of Proposed Development:

Transalloys (Pty) Ltd propose to develop the Transalloys Solar PV Facility and its associated electrical infrastructure adjacent to their smelter complex on Clewer Road 1034, Witbank in the Emalahleni Local Municipality. The project is located in the greater Nkangala District Municipality of Mpumalanga Province approximately 34km west of Middleburg and 37km east of Bronkhorstspuit and within the REDZ9 in Emalahleni and the International Corridor.

A technically suitable project site of ~235ha has been identified by Transalloys (Pty) Ltd for the establishment of the PV facility. The proposed facility will have a contracted capacity of up to 50MW and will include the following infrastructure:

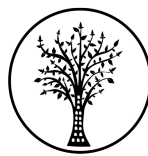
- Solar PV array comprising PV modules and mounting structures (monofacial or bifacial and a single axis tracking system)
- Inverters and transformers
- Cabling between the project components
- On-site facility substation and power lines between the solar PV facility and the plant.
- Site offices, Security office, operations and control, and maintenance and storage laydown areas
- Access roads, internal distribution roads

The PV facility is proposed in order to meet Transalloys' current electricity demands and future expansion requirements. The plant will be a captive generating plant whereby generated electricity will be fed directly into the smelter complex for direct consumption. The development of the power plant project would effectively mean that Transalloys would become independent of the Eskom electricity grid, thereby creating additional capacity within the Eskom grid for use by other electricity users.

#### 5. Heritage Resources Identified in and near the study area:

##### Heritage resources identified from fieldwork 2014 and 2019

Site ID	Site no	Full Site Name	Site Type	Grading
26597	9/2/284/0001	NZASM Station, Clewer, Schoongezicht 308 JS, Witbank District	Building	Grade II
45183	TRANS001	Transalloys 001	Burial Grounds & Graves	Grade IIIa
45184	TRANS002	Transalloys 002	Living Heritage/Sacred sites	Grade IIIa
45185	TRANS003	Transalloys 003	Living Heritage/Sacred sites	Grade IIIa
45186	TRANS004	Transalloys 004	Structures	Grade IIIc



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<b>45188</b>	<b>TRANS006</b>	<b>Transalloys 006</b>	<b>Structures</b>	<b>Grade IIIc</b>
<b>45189</b>	<b>TRANS007</b>	<b>Transalloys 006</b>	<b>Structures</b>	<b>Grade IIIc</b>
45190	TRANS008	Transalloys 008	Structures	Grade IIIc
45192	TRANS002	Transalloys 002	Living Heritage/Sacred sites	Grade IIIa
<b>45193</b>	<b>TRANS005</b>	<b>Transalloys 005</b>	<b>Structures</b>	<b>Grade IIIc</b>
45195	TRANS009	Transalloys 009	Structures	Grade IIIc
<b>44024</b>	<b>CLE001</b>	<b>Clewer 001</b>	<b>Palaeontological</b>	<b>Grade IIIb</b>
44057	EFT309JS01	Elandsfontein 309 JS 01	Burial Grounds & Graves	Grade IIIa
105482	NZASM_EL_137	Cottage 1 Clewer	Building	Grade II
105484	NZASM_EL_139	Cottage 2 Clewer	Building	Grade II

#### 6. Anticipated Impacts on Heritage Resources:

No new archaeological field assessment has been completed for this project as the area proposed for development has been previously thoroughly surveyed for heritage resources in 2014 and as recently as 2019. The results of the 2014 and 2019 field assessments are mapped against this proposed development in this HIA report.

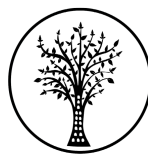
All of the known heritage resources identified through previous assessments and their recommended buffer areas as well as the wetland buffer areas have been mapped in order to identify areas that are appropriate for the PV development from a heritage perspective (Figure 5). The final layout of the proposed PV area has been mapped relative to these known heritage resources. Sites 45186, 45188, 45189 and 45193 fall within the PV areas. All of these “sites” represent piles of modern debris, likely mining related, that are not conservation-worthy. Van der Walt (2019) notes that sites such as these may contain graves however this is unlikely in this instance.

Based on the heritage information available, there is no objection to the proposed PV development as per the Final Layout provided on heritage grounds as all known significant heritage resources are avoided by the proposed development and the recommended buffers are respected.

#### 7. Recommendations:

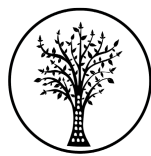
There is no objection to the proposed development in terms of impacts to heritage resources on condition that:

- The Heritage Management Plan proposed by Van Vollenhoven in 2014 be drafted to cover the ongoing conservation and management of the burial ground identified as well as the initiation sites for the duration of the Construction and Operational Phases.
- The attached Chance Fossil Finds Procedure is implemented for the duration of construction activities



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- Should any buried archaeological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. The South African Heritage Resources Agency (SAHRA) must be contacted immediately in order to determine an appropriate way forward.



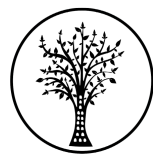
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### **Details of Specialist who prepared the HIA**

**Jenna Lavin**, an archaeologist with an MSc in Archaeology and Palaeoenvironments, and currently completing an MPhil in Conservation Management, heads up the heritage division of the organisation, and has a wealth of experience in the heritage management sector. Jenna's previous position as the Assistant Director for Policy, Research and Planning at Heritage Western Cape has provided her with an in-depth understanding of national and international heritage legislation. Her 8 years of experience at various heritage authorities in South Africa means that she has dealt extensively with permitting, policy formulation, compliance and heritage management at national and provincial level and has also been heavily involved in rolling out training on SAHRIS to the Provincial Heritage Resources Authorities and local authorities.

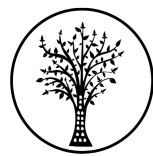
Jenna is a member of the Association of Professional Heritage Practitioners (APHP), and is also an active member of the International Committee on Monuments and Sites (ICOMOS) as well as the International Committee on Archaeological Heritage Management (ICAHM). In addition, Jenna has been a member of the Association of Southern African Professional Archaeologists (ASAPA) since 2009. Recently, Jenna has been responsible for conducting training in how to write Wikipedia articles for the Africa Centre's WikiAfrica project.

Since 2016, Jenna has drafted over 100 Heritage Impact Assessments throughout South Africa.



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## **1. INTRODUCTION**

### **1.1 Background Information on Project**

Transalloys (Pty) Ltd propose to develop the Transalloys Solar PV Facility and its associated electrical infrastructure adjacent to their smelter complex on Clewer Road 1034, Witbank in the Emalahleni Local Municipality. The project is located in the greater Nkangala District Municipality of Mpumalanga province approximately 34km west of Middelburg and 37km east of Bronkhorstspuit and within the REDZ9 in Emalahleni and the International Corridor.

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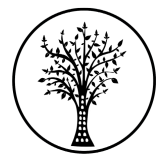
- Solar PV array comprising PV modules and mounting structures (monofacial or bifacial and a single axis tracking system)
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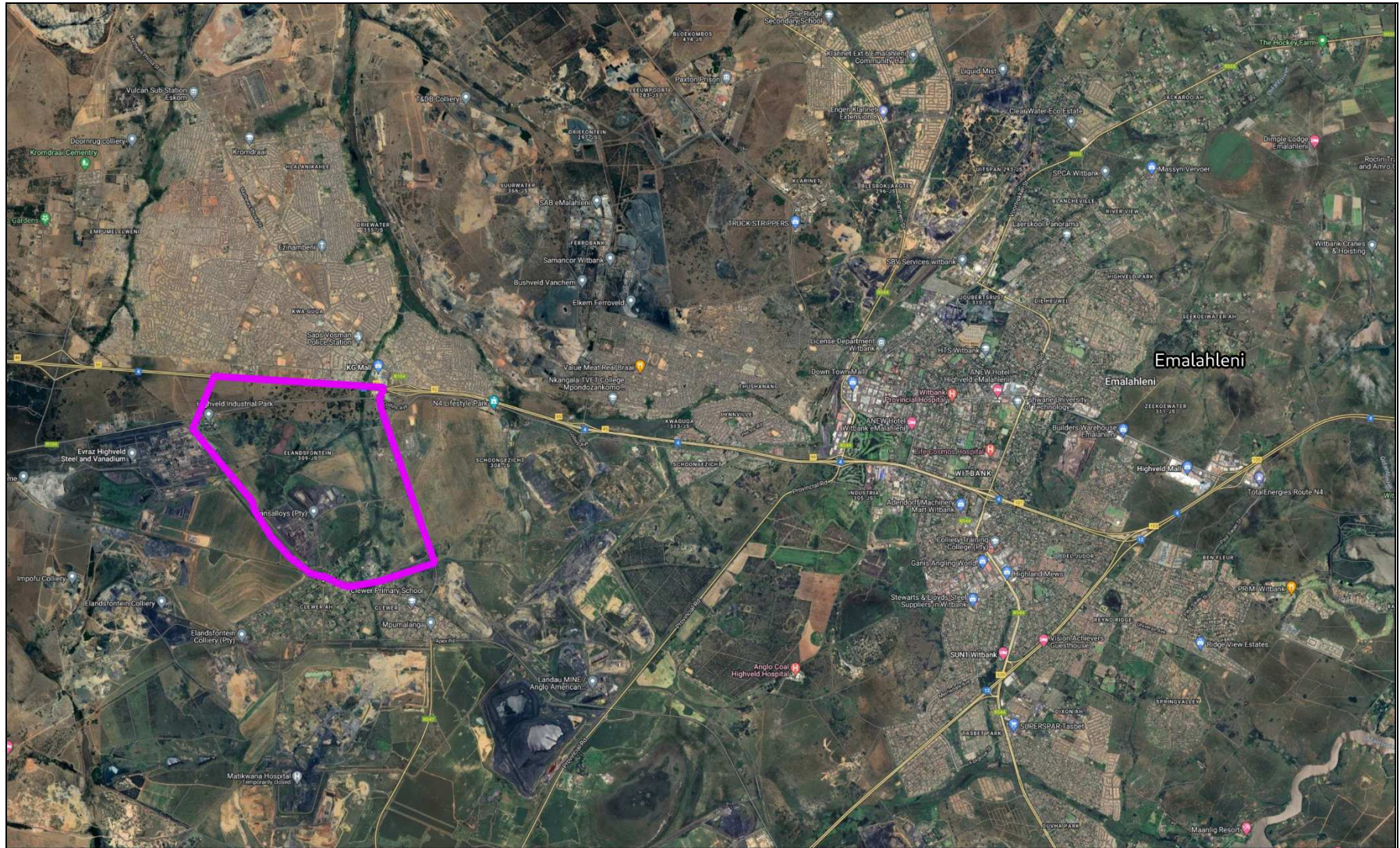
### **1.2 Description of Property and Affected Environment**

According to Van der Walt (2019), the development area is very flat and has been extensively altered by large-scale industrial and mining activities. Van der Walt (2019) goes on to note that "Transalloys (Pty) Ltd (Transalloys) is a ferro-metal plant recovering Silicon Manganese (SiMn) from its ore. Transalloys is located 9 kilometres south-west of Witbank (eMalahleni) in Mpumalanga Province and directly south of the N4 freeway between Pretoria and Nelspruit. It is situated on portions 34 and 35 of the farm Elandsfontein 309JS and portions 20 and 24 of the farm Schoongezicht 308JS. It is bounded to the south-east by Clewer, a small township south-west of Witbank. The site falls within the jurisdiction of the eMalahleni Local Municipality, a constituent of the Nkangala District Municipality. Land use activities in the Transalloys neighbourhood include agriculture, residential and industrial."





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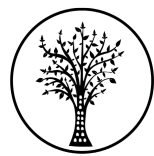
 Development Area



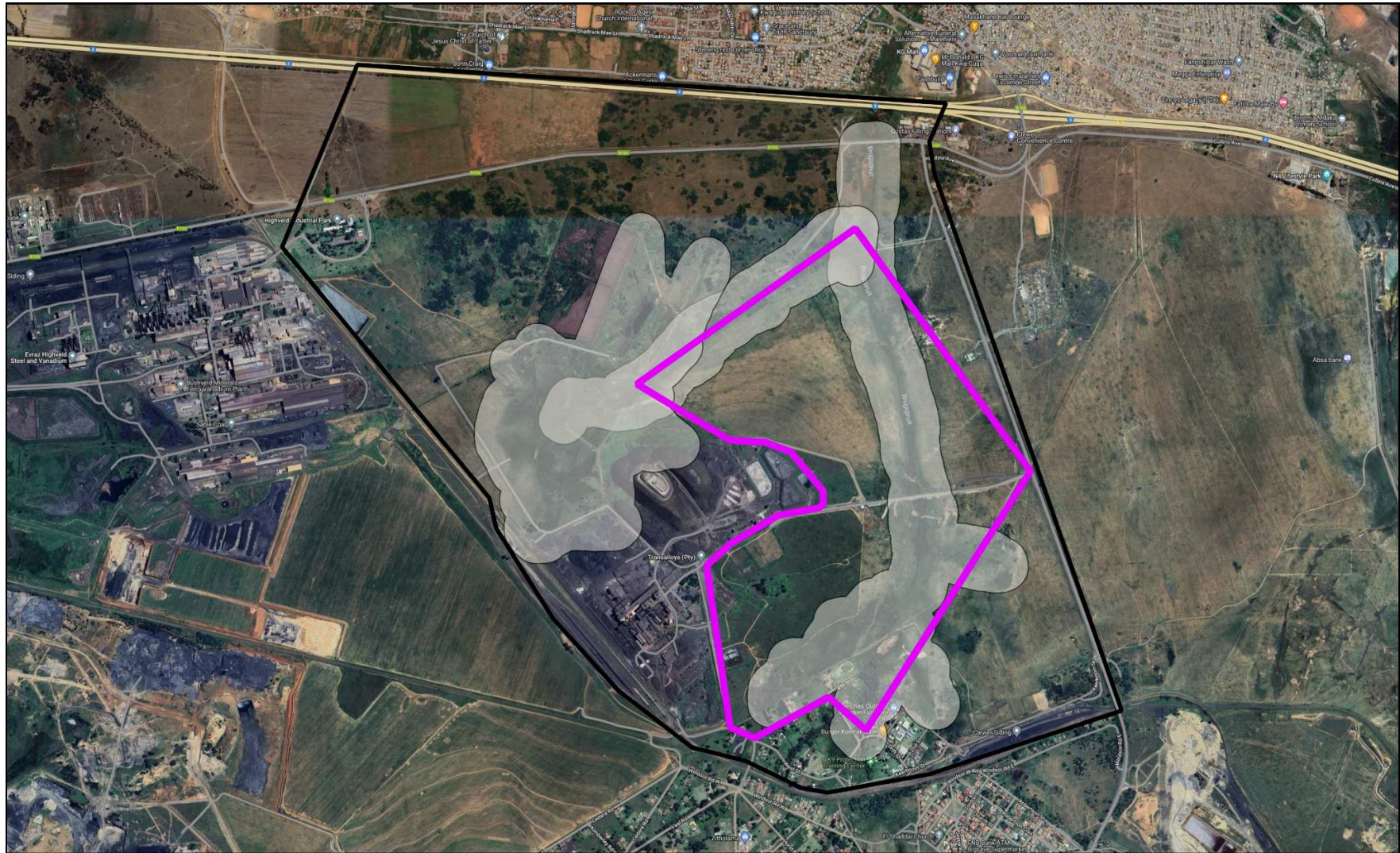
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Map 1.1: The proposed development area

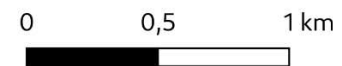
Cedar Tower Services (Pty) Ltd t/a CTS Heritage  
238 Queens Road, Simons Town  
Email [info@ctsheritage.com](mailto:info@ctsheritage.com) Web <http://www.ctsheritage.com>



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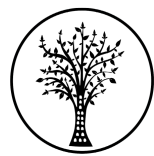
-  Transalloys Development Area Final
-  Broad Development Area
-  Wetland



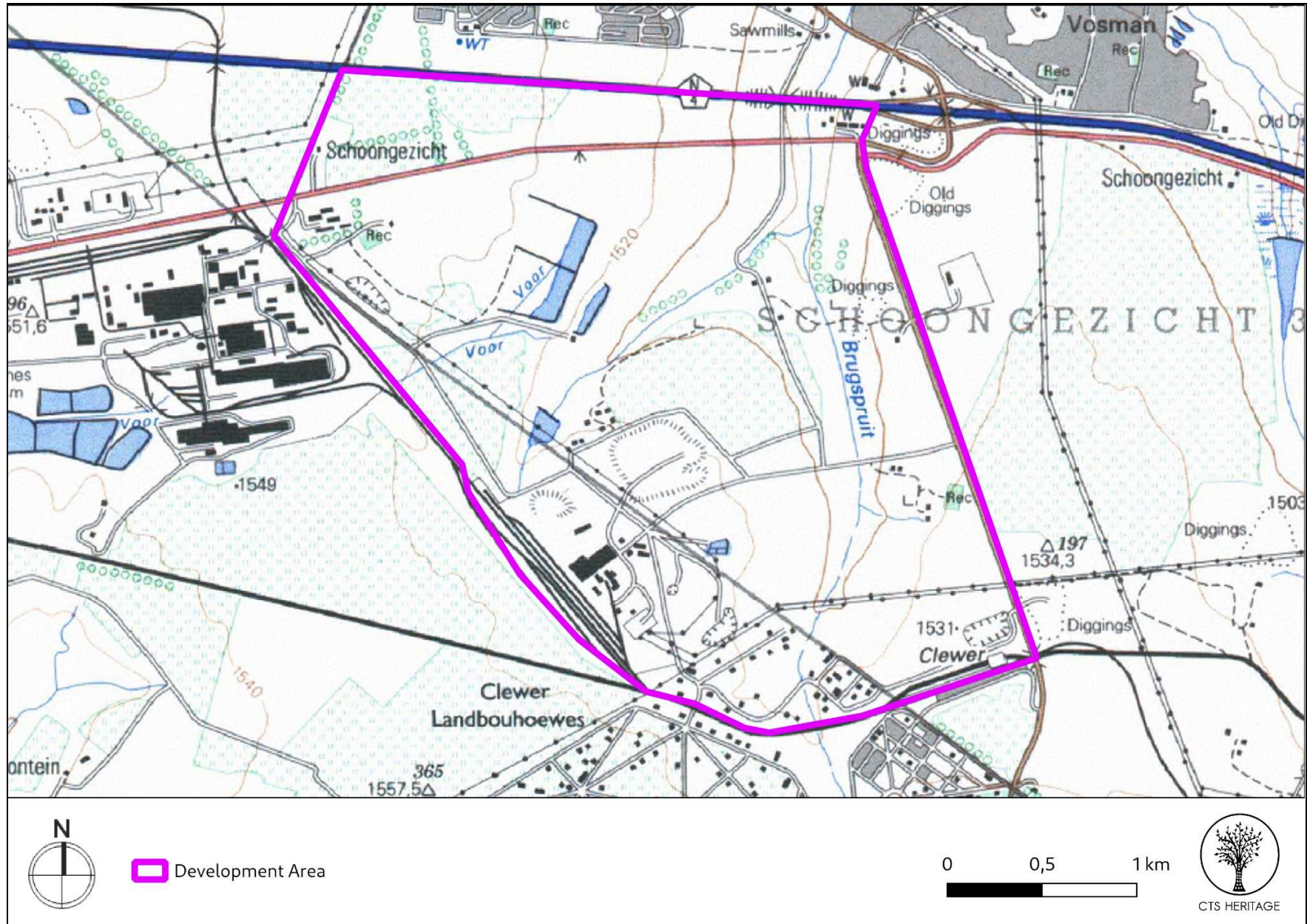
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Map 1.2: The proposed development area

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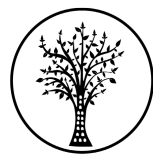


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Map 1.3: Study Area reflected on the 1:50 000 Topo Map

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## 2. METHODOLOGY

### 2.1 Purpose of HIA

The purpose of this Heritage Impact Assessment (HIA) is to satisfy the requirements of section 38(8), and therefore section 38(3) of the National Heritage Resources Act (Act 25 of 1999).

### 2.2 Summary of steps followed

- A Desktop Study was conducted of relevant reports previously written (please see the reference list for the age and nature of the reports used) (Appendix 1)
- An archaeologist conducted an assessment of the broader study area in order to determine the archaeological resources likely to be disturbed by the proposed development in 2014 (Van Vollenhoven, 2014 and van der Walt, 2014) and 2019 (van der Walt, 2019). The results of this assessment are referred to herein.
- The identified resources were assessed to evaluate their heritage significance and potential impacts to these resources were interrogated
- Alternatives and mitigation options were discussed with the Environmental Assessment Practitioner

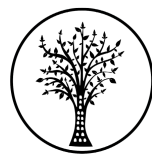
### 2.3 Assumptions and uncertainties

- The *significance* of the sites and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.
- It should be noted that archaeological and palaeontological deposits often occur below ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted, and it would be required that the heritage consultants are notified for an investigation and evaluation of the find(s) to take place.

However, despite this, sufficient time and expertise was allocated to provide an accurate assessment of the heritage sensitivity of the area.

### 2.4 Constraints & Limitations

No new archaeological field assessment has been completed for this project as the area proposed for development has been previously thoroughly surveyed for heritage resources in 2014 and as recently as 2019. The results of the 2014 and 2019 field assessments are mapped against this proposed development in this HIA report.



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## 2.5 Savannah Impact Assessment Methodology

Direct, indirect and cumulative impacts of the issues identified through the Basic Assessment process were assessed in terms of the following criteria:

- The nature, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The extent, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high).
- The duration, wherein it will be indicated whether:
  - The lifetime of the impact will be of a very short duration (0 – 1 years) – assigned a score of 1.
  - The lifetime of the impact will be of a short duration (2 – 5 years) – assigned a score of 2.
  - Medium-term (5 – 15 years) – assigned a score of 3.
  - Long term (> 15 years) – assigned a score of 4.
  - Permanent – assigned a score of 5.
- The consequences (magnitude), quantified on a scale from 0 – 10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The probability of occurrence, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1 – 5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The significance, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high.
- The status, which will be described as either positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated.

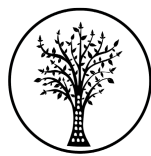
The significance is calculated by combining the criteria in the following formula:

$$S = (E + D + M) \times P$$

S = Significance weighting

E = Extent

D = Duration



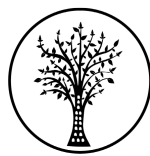
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M = Magnitude

P = Probability

The significance weightings for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area).
- 30 – 60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated).
- > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).



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### 3. HISTORY OF DEVELOPMENT AT THIS SITE

In 2014, the area proposed for development in this assessment was subject to a Heritage Impact Assessment process completed by Van Vollenhoven (2014) for the development of two pollution control dams. However, a much larger area was investigated in 2014 in order to assist with future planning at the plant. As part of that submission on SAHRIS, the following information is provided in a letter drafted by Jacobs (2014) on behalf of the EAP, Hydro-Science: “The site is a developed industrial site (in existence since the 1960s). The operations have existing waste management licences, water-use licences and authorisations for its current activities.”

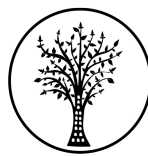
Only one heritage resource of significance was identified as part of that HIA process (Van Vollenhoven, 2014), a burial ground consisting of 90 graves. This site has been recorded on SAHRIS as site 44057 and 45183. It has been confirmed that this site is separately fenced off at present and it falls outside of this development area.

In SAHRA’s response dated 22 July 2014 to the HIA completed in 2014, it is noted that:

*SAHRA has no objection to the proposed development on condition that;*

- *If the excavations for the foundations of the dams extend down into the bedrock, the potentially fossiliferous rock rubble generated be dumped in spoil heaps on the property. This will give palaeontologists with permits from SAHRA the opportunity to split the rocks at their leisure to look for fossils and collect what they need when they visit the area.*
- *In terms of the identified burial ground, the identified site must be fenced and clearly demarcated and may not be impacted by any proposed development. A Conservation Management Plan (CMP) must be developed for its continued preservation.*
- *Should any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials, fossils or other categories of heritage resources are found during the proposed activities, SAHRA APM Unit (Jenna Lavin/Colette Scheermeyer 021 462 4502) must be alerted immediately, and a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance a Phase 2 rescue operation might be necessary*

In 2013, Transalloys (Pty) Ltd proposed to amend their approved 55MW coal-fired power station Environmental Authorisation (EA), in order to increase the generation capacity of the power station to about 120-150 MW of electricity. As part of this process, additional heritage assessment work was undertaken by Van der Walt in 2014 and again in 2019.



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According to the SAHRA response to the HIA by Van der Walt (2014) dated 24 April 2015;

*Three heritage sites were identified by Van der Walt (2014) and six foundations of demolished buildings were identified during the field assessment.*

- **Initiation Site No. 1 and 2:** *They are both located outside the site alternatives. The sites were pointed out by a local informant and are considered to be of high social significance. Site 1 is associated with Ndebele/Sotho speaking people and is located on the western banks of the Brugspruit in a cluster of trees. Site 2 is associated with Pedi speaking people who visit the area yearly. Modern glass and cans were noted on the surface. No mitigation is needed as it is located outside the development footprint.*
- **Cemetery Site:** *This site consists of 100 graves of which the oldest inscribed date is 1947 and the youngest is 1960. The site is of High Significance. Grave dressings are made from various materials, including stone packing, cement and granite. The cemetery is located outside the possible development.*
- **Sites WPT no. 320 to 328:** *These sites are foundations and rubble from demolished structures. These sites are considered to be of low significance and there is no permit required before they can be destroyed.*

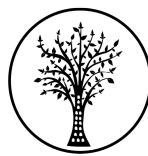
In response to the HIA completed by Van der Walt (2014), SAHRA concluded on 24 April 2015 that:

*SAHRA has no objections to the proposed development on the condition that:*

- *SAHRA supports the recommendations of the field based HIA that the cemetery is not disturbed in any manner during construction and operation of the Power Plant. The cemetery is fenced off and an entrance gate is installed for the families to come visit their family graves.*
- *SAHRA agrees and supports the recommendations made in the Desktop Paleontological Study that if any palaeontological resources are discovered then the ECO should immediately inform a palaeontologist to come and inspect the finds.*
- *Should any evidence of any significant archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments and charcoal/ash concentrations), unmarked human burials, fossils or other categories of heritage resources are found during the proposed activities, SAHRA APM Unit (Nokukhanya Khumalo/Colette Scheermeyer 021 462 4502) must be alerted immediately, and a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance a Phase 2 rescue operation might be necessary.*

***At this stage, SAHRA did not require any additional interventions with regard to the identified burial grounds and initiation sites.***





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A further HIA was completed for this site in 2019 by Van der Walt when Transalloys (Pty) Ltd proposed to amend their approved 55MW coal-fired power station Environmental Authorisation (EA), in order to increase the generation capacity of the power station to about 120-150 MW of electricity.

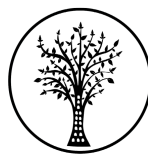
In the response to this EA Amendment application, SAHRA (24 March 2021) notes that;

*The author (Van der Walt, 2019) undertook a field survey of the proposed development to assess the potential impacts the proposed new power station and ash dump layout might have on heritage resources. The author identified 4 sites that may be of heritage significance (TA 1 to 4). TA 1 to 3 are the remains of historical homestead houses and a nearby fenced graveyard. TA 4 is a small stone cairn created by rocks removed from crop fields. The author assessed that TA4 is not a heritage site and should not be managed as a heritage site. TA 1 to 3 are of low heritage significance and that the development may go ahead without further mitigation. Furthermore, a palaeontological assessment by Milstead, B was undertaken in 2013 and subsequently approved in the first EA application. The author recommends the chance finds procedures in the PIA must be included in the EMP for implementation.*

SAHRA's Final Comment on this application dated 24 March 2021 states;

*The South African Heritage Resources Agency (SAHRA) Archaeology, Palaeontology and Meteorites (APM) Unit accepts the HIA and the PIA reports submitted to the case for commenting, and has no objection to the development going ahead on the following conditions.*

- *A comment regarding the retention or destruction of the buildings identified in the HIA report must be obtained from the Mpumalanga Heritage Resources Authority (MPHRA). Please contact Mr Benjamin Moduka at [bmoduka@mpg.gov.za](mailto:bmoduka@mpg.gov.za) for processes to follow.*
- *The Chance Finds Fossil Procedures as detailed in the PIA report must be included in the EMP.*
- *In the event that fossils are uncovered during construction then construction must cease within the immediate vicinity, a buffer of 30 m must be established, and a palaeontologist called in to inspect the finds. The palaeontologist must obtain a section 35(4) permit in terms of NHRA and Chapter IV NHRA Regulations, before any fossils are collected.*
- *If there are any new heritages resources are discovered during construction and operation phases of the proposed development, then a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings at the expense of the developer.*
- *If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required at the expense of the developer. Mitigation will only be carried out after the archaeologist or palaeontologist obtains a permit in terms of section 35 of the NHRA (Act 25 of 1999). You may contact SAHRA APM Unit for further details: (Nokukhanya Khumalo/Phillip Hine 021 202 8654).*



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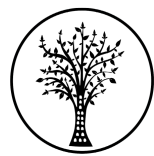
- *If any unmarked human burials are uncovered and the archaeologist called in to inspect the finds and/or the police find them to be heritage graves, then mitigation may be necessary and the SAHRA Burial Grounds and Graves (BGG) Unit must be contacted for processes to follow (Thingahangwi Tshivase/Mimi Seetelo 072 802 1251).*
- *Once a Record of Decision from the competent authority is issued, it must also be submitted to the case.*

In this most recent response to development activities at this site (2021), SAHRA did not require any additional consultation with affected communities regarding the burial grounds or the initiation sites, nor did SAHRA reiterate its earlier requirement for a Conservation Management Plan for the heritage resources of high local significance located here.

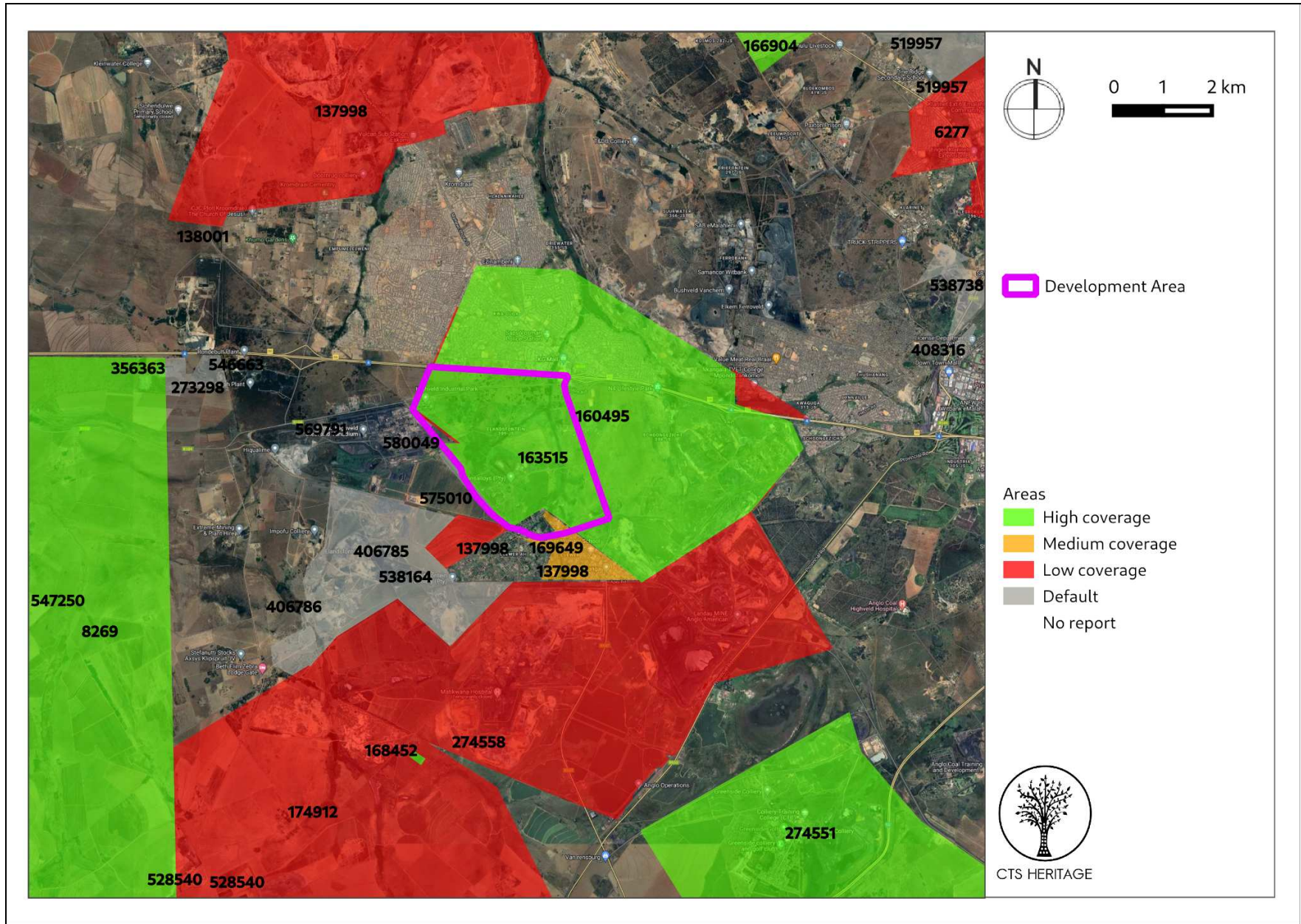
Considering SAHRA's previous comments endorsing various development activities at this site, the author and EAP were surprised at SAHRA's additional requirements as communicated in their correspondence for this development proposal dated 10 May 2023 which states:

- *SAHRA requests that an updated development specific HIA that complies with section 38(3) of the NHRA be conducted for the proposed development. This must include heritage specific consultation with regards to the impacts to the initiation sites and burial grounds.*
- *The applicant is advised to extend the EA process in terms of section 19(1)b of the NEMA EIA regulations in order to address this comment.*

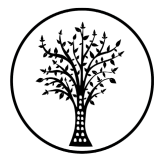
We have presumed this response was made to the summary data presented in the form of the submission as a Desktop Heritage Screener and have therefore compiled this full HIA which satisfies the requirements of section 38(3) of the NHRA and includes the full detail about the public participation and heritage assessment work done on site related to this development which has been reduced in size since the original layouts assessed between 2014-2019. The results of the public consultation process undertaken as part of the Draft BAR process were provided to SAHRA via SAHRIS and the results of this consultation with specific reference to the burial grounds and initiation sites are detailed in Section 6 below.



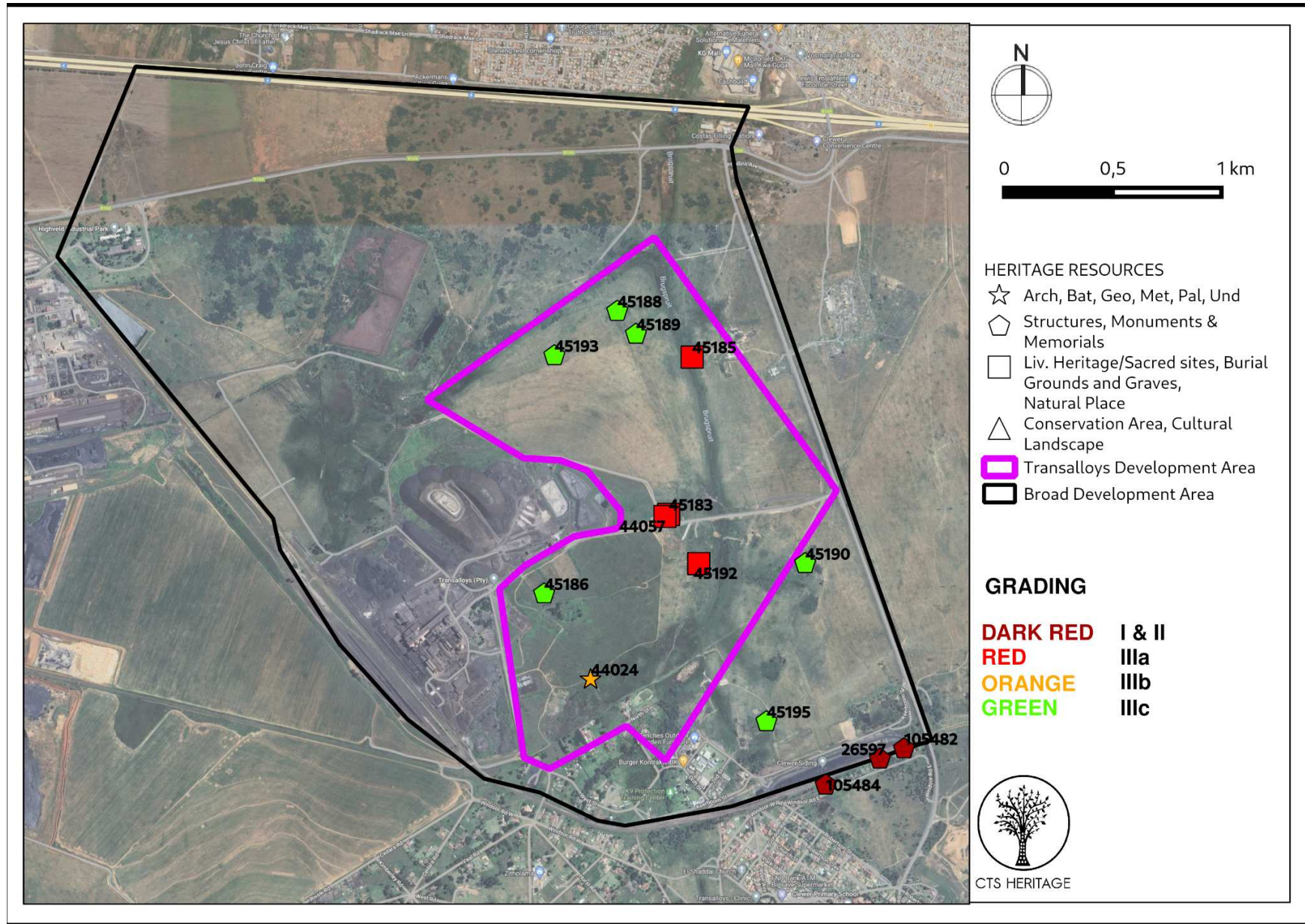
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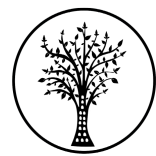
Map 2.1: Spatialisation of heritage assessments conducted in proximity to the broader study area



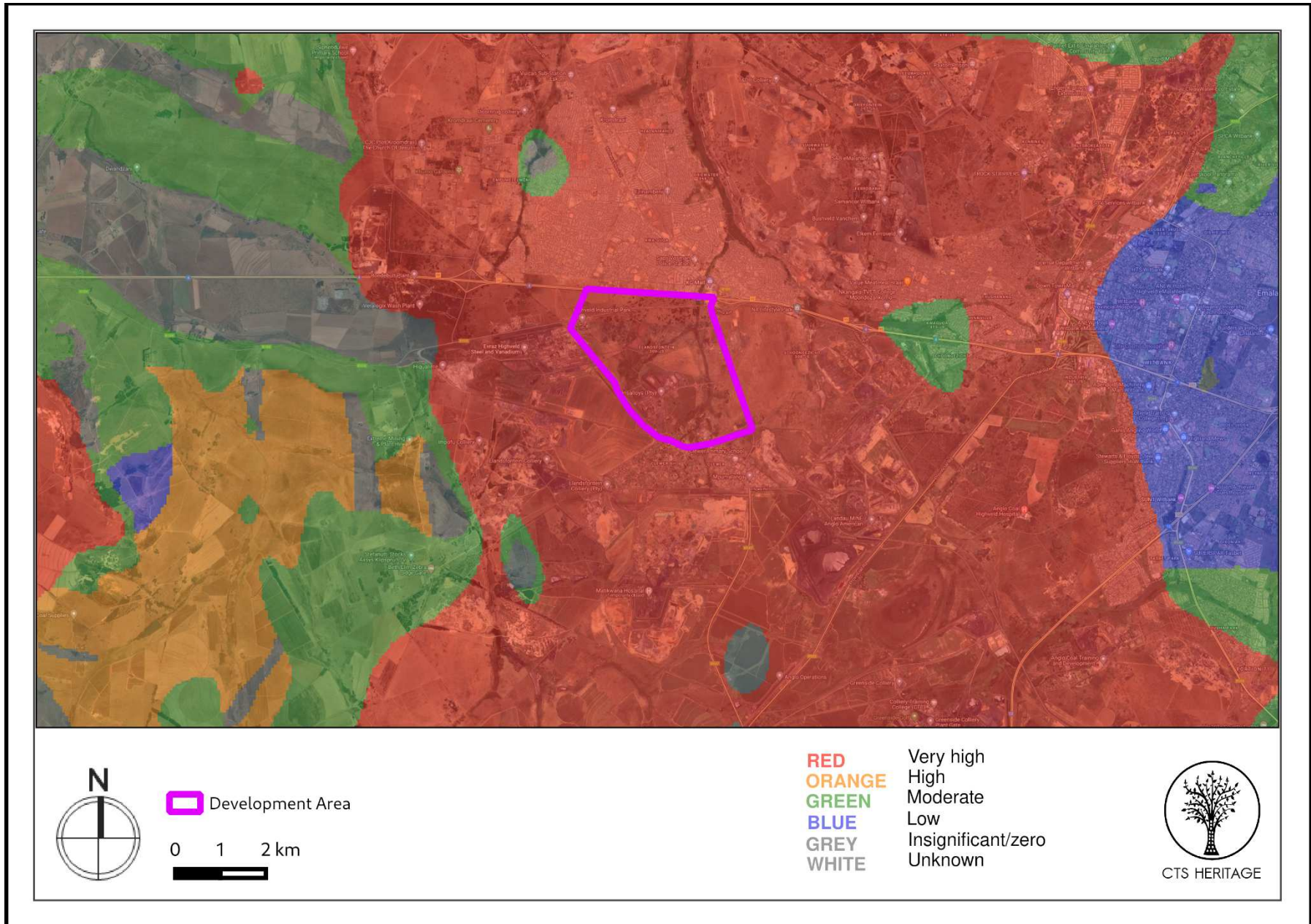
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Map 2.1: Spatialisation of heritage resources known in proximity to the broader study area



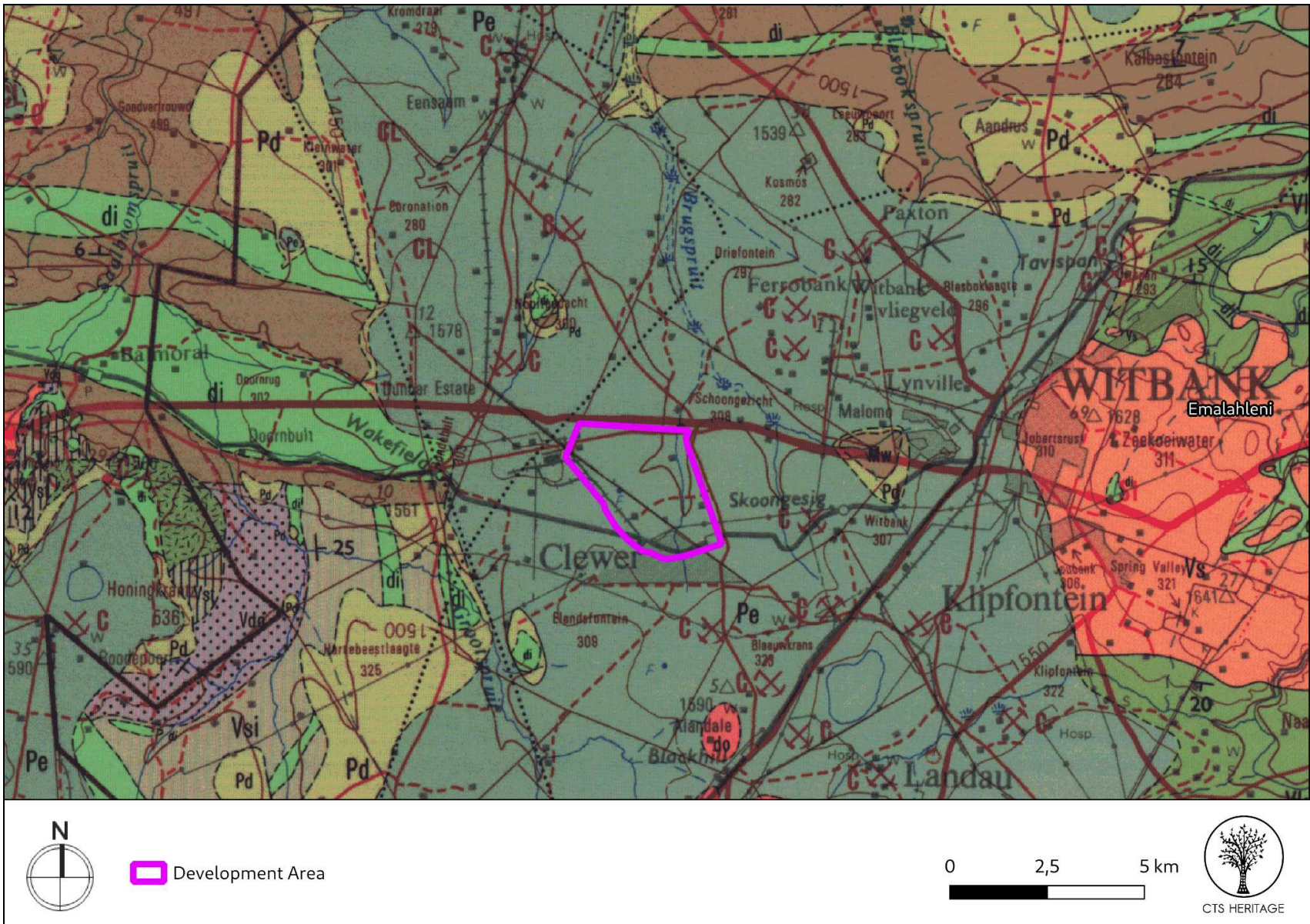
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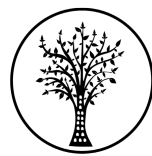
Map 3.1: Palaeontological sensitivity of the area surrounding the broader study area



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Map 3.2: Geology Map. Extracted from the CGS Map 2528 Pretoria Map indicating that the development area is underlain by sediments of the Eccia Formation (Pe)



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## **4. IDENTIFICATION OF HERITAGE RESOURCES**

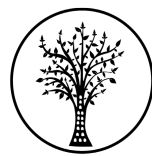
### **4.1 Summary of findings of Specialist Reports**

#### **4.1.1 Archaeology**

Van Vollenhoven's (2014) assessment identified a number of heritage resources within and in proximity to the area proposed for development including "the remains of a very large graveyard containing at least 90 graves. Different types of grave dressing and headstones are found, being cement borders with headstones, heaps of soil, stone packed with or without headstones, granite borders and headstones and heaps of brick. A few are even fenced in. Surnames identified include Gasibone, Mdlalose, Masilela, Blom and Mokoena. Only eight of the graves have dates of death indicated, with the oldest being 1947 and the youngest 1960." According to Van der Walt (2019), it is noted that the graveyard is separately fenced off. This site is marked as SAHRIS Site 44057 and 45183. Van Vollenhoven (2014) recommended no impact to this site and this recommendation is reiterated in this assessment. Furthermore, it is recommended that due to the ongoing social significance of this site, that visitation access is ensured in the proposed development. Van Vollenhoven (2014) further recommended that a management plan be developed for this site's ongoing management. This recommendation is also reiterated in this report.

In his assessment of the site (2019), Van der Walt determined that the overall area has limited heritage sensitivity. Van der Walt (2019) noted that the development area has been impacted by agricultural activities and recent mining operations. Van der Walt (2019) identified the demolished remains of three structures within the development area. These structures were determined to be Not Conservation-Worthy in Van der Walt's report (2019), described simply as cement and bricks, and are marked as Sites 45186, 45188, 45189 and 45193 in Figure 3A. No recommendations are made in this regard as these sites have no heritage value. All represent piles of cement slabs and concrete. Van der Walt (2019) notes that sites such as these may contain graves however this is unlikely in this instance.

Two sites that have social significance as initiation sites were identified in Van der Walt (2019). These are marked as Sites 45192 and 45185 in Figure 3A above as the general locations of these initiation sites. Initiation site 1 (Site 45192) is located on the western bank of the "Brugspruit" within a cluster of wattle trees. No features occur in this area but according to Mr Knoetze the site is visited approximately every 3 years by Ndebel and Sotho participants. Initiation site 2 (Site 45183) is located at a low water bridge over the "Brugspruit". According to Mr. Knoetze the site is visited yearly by Pedi participants. At the time of the survey no one was attending an initiation school at any of the two sites. However, it is important that the ongoing cultural practices that take place at these sites are retained and provided for in the proposed development. These sites are included within the wetland buffer areas provided.

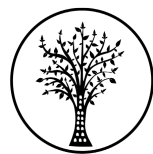


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#### **4.1.2 Palaeontology**

According to the SAHRIS Palaeosensitivity Map, the area proposed for development is underlain by sediments of very high palaeontological sensitivity. According to the CGS Map for Pretoria, the underlying geology of the development area consists of sediments of the Eccca Formation. In 2014, a desktop palaeontology assessment of the area was completed by Durand (2014). Durand (2014) notes that “The region is known for its fossiliferous mudstones and sandstones and it is highly probable that fossils will be encountered during construction if the excavations expose the bedrock. The potentially fossiliferous unit in the study area which may be impacted during construction consists of weathered sandstone.” Durand (2014) also notes that *Glossopteris* leaves are abundant in Eccca Group sediments in Gauteng, Free State, Mpumalanga and KwaZulu-Natal and could be considered to be amongst the most common fossils in South Africa. Most of the geology in the study site is presently covered by alluvium and the bedrock will only be exposed during excavations. There are large and well described collections of fossil material from this region at the Council for Geoscience and at the Bernard Price Institute for Palaeontology at the University of the Witwatersrand. SAHRIS Site 44024 is marked on Figure 3 and 3A and represents a *Glossopteris* leaf imprint in fine sandstone found ex situ. Despite the grainy nature of the sandstone, the venation pattern of the leaf is visible.” This site falls within the wetland buffer area provided. As such, no further recommendations are made in terms of impacts to palaeontological heritage resources.





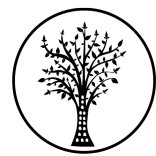
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## 4.2 Heritage Resources identified

The results of the field assessments completed by Van Vollenhoven (2014) and Van der Walt (2019) have been listed below and have been mapped against the proposed development layout in the figures below.

**Table 2: Heritage resources identified from fieldwork 2014 and 2019**

Site ID	Site no	Full Site Name	Site Type	Grading
26597	9/2/284/0001	NZASM Station, Clewer, Schoongezicht 308 JS, Witbank District	Building	Grade II
<b>45183</b>	<b>TRANS001</b>	<b>Transalloys 001</b>	<b>Burial Grounds &amp; Graves</b>	<b>Grade IIIa</b>
<b>45184</b>	<b>TRANS002</b>	<b>Transalloys 002</b>	<b>Living Heritage/Sacred sites</b>	<b>Grade IIIa</b>
<b>45185</b>	<b>TRANS003</b>	<b>Transalloys 003</b>	<b>Living Heritage/Sacred sites</b>	<b>Grade IIIa</b>
<b>45186</b>	<b>TRANS004</b>	<b>Transalloys 004</b>	<b>Structures</b>	<b>Grade IIIc</b>
<b>45188</b>	<b>TRANS006</b>	<b>Transalloys 006</b>	<b>Structures</b>	<b>Grade IIIc</b>
<b>45189</b>	<b>TRANS007</b>	<b>Transalloys 006</b>	<b>Structures</b>	<b>Grade IIIc</b>
45190	TRANS008	Transalloys 008	Structures	Grade IIIc
45192	TRANS002	Transalloys 002	Living Heritage/Sacred sites	Grade IIIa
<b>45193</b>	<b>TRANS005</b>	<b>Transalloys 005</b>	<b>Structures</b>	<b>Grade IIIc</b>
45195	TRANS009	Transalloys 009	Structures	Grade IIIc
<b>44024</b>	<b>CLE001</b>	<b>Clewer 001</b>	<b>Palaeontological</b>	<b>Grade IIIb</b>
44057	EFT309JS01	Elandsfontein 309 JS 01	Burial Grounds & Graves	Grade IIIa
105482	NZASM_EL_137	Cottage1 Clewer	Building	Grade II
105484	NZASM_EL_139	Cottage 2 Clewer	Building	Grade II



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### 4.3 Mapping and spatialisation of heritage resources

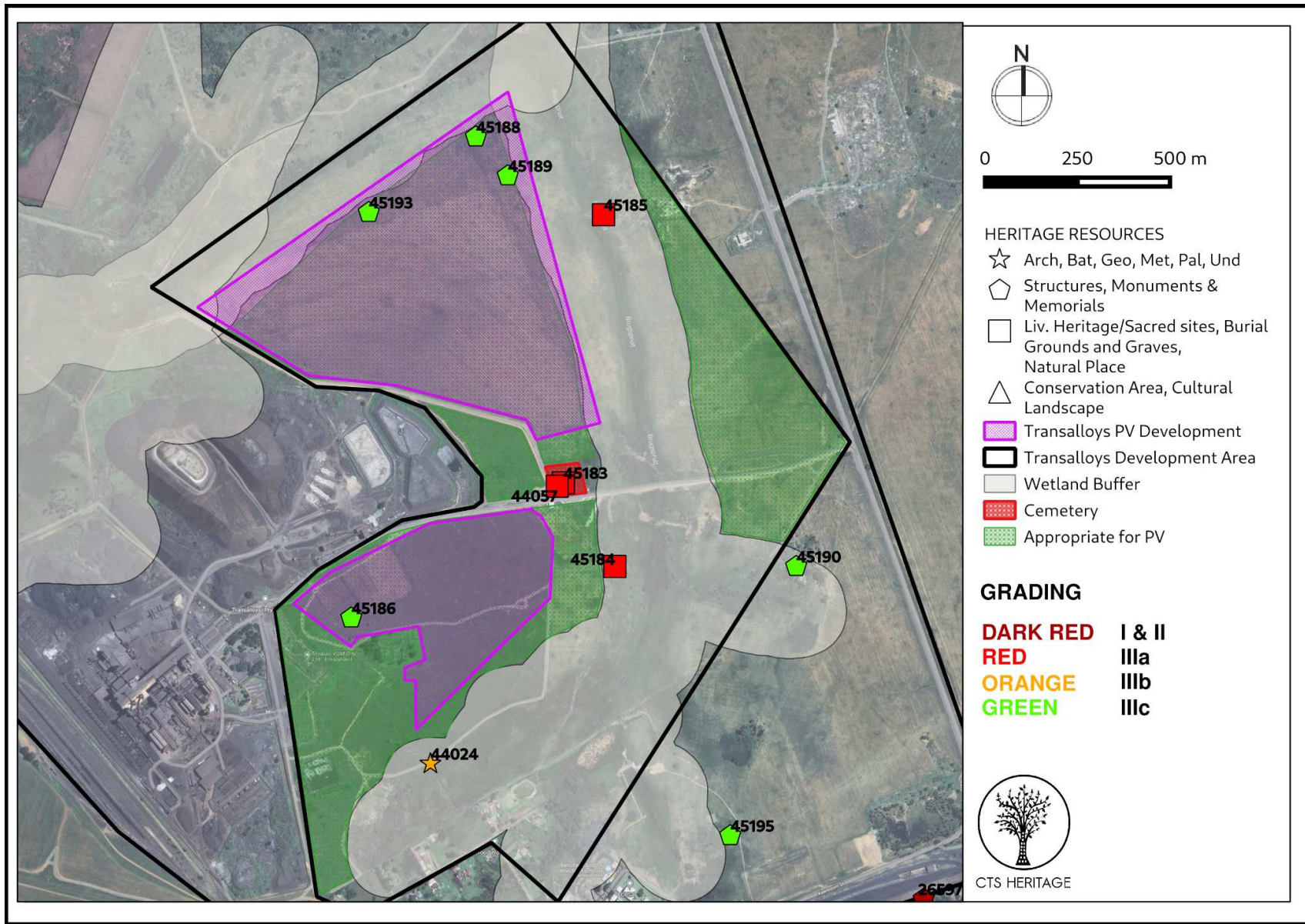
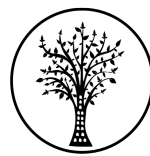


Figure 7: Map of heritage resources identified during the field assessment, relative to the proposed development



## 5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

### 5.1 Assessment of impact to Heritage Resources

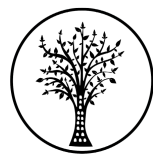
#### 5.1.1 Archaeology

The significant resources identified in the heritage impact assessments completed by Van Vollenhoven (2014) and Van der Walt (2019) do not reflect significant stone age or iron age archaeology, but reflect burial grounds and graves (Sites 45183 and 44057) and initiation sites that are in active use (Sites 45184 and 45185). Based on the layout assessed in this report, none of these resources will be directly impacted by the proposed development of the PV facilities as they are located within the no-go areas. It is further noted that the burial sites are already fenced off and clearly marked.

Indirect impact with regard to access to the burial sites and initiation sites is possible, however this can be ensured and managed through the development of a Management Plan as proposed by SAHRA in their correspondence dated 22 July 2014.

**Table 4.1: Impacts of the proposed development on archaeological resources**

<b>NATURE:</b> It is possible that buried archaeological resources may be impacted by the proposed development in the preferred location			
		<b>Without Mitigation</b>	<b>With Mitigation</b>
<b>MAGNITUDE</b>	<b>M (3)</b>	No archaeological resources of significance were identified within the development area however burial grounds and active initiation sites may be indirectly impacted	<b>M (3)</b> No archaeological resources of significance were identified within the development area however burial grounds and active initiation sites may be indirectly impacted
<b>DURATION</b>	<b>H (5)</b>	Where manifest, the impact will be permanent.	<b>H (5)</b> Where manifest, the impact will be permanent.
<b>EXTENT</b>	<b>L (1)</b>	Limited to the development footprint	<b>L (1)</b> Limited to the development footprint
<b>PROBABILITY</b>	<b>M (3)</b>	It is possible that significant heritage will be impacted indirectly	<b>L (1)</b> It is unlikely that significant heritage will be impacted
<b>SIGNIFICANCE</b>	<b>L</b>	$(3+5+1) \times 3 = 27$	<b>L</b> $(3+5+1) \times 1 = 9$
<b>STATUS</b>		Negative	Negative
<b>REVERSIBILITY</b>	<b>L</b>	Any impacts to heritage resources that do occur are irreversible	<b>L</b> Any impacts to heritage resources that do occur are irreversible
<b>IRREPLACEABLE LOSS OF RESOURCES?</b>	<b>L</b>	Not Likely	<b>L</b> Not Likely
<b>CAN IMPACTS BE MITIGATED</b>		NA	
<b>MITIGATION:</b>			
A Heritage Management Plan should be developed to ensure the ongoing management and access of concerned communities to the identified burial grounds and initiation sites			
Should any previously unrecorded archaeological resources or possible burials be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.			
<b>RESIDUAL RISK:</b>			
None			

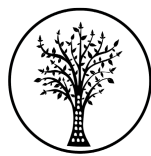


### 5.1.2 Palaeontology

According to the SAHRIS Palaeosensitivity Map, the area proposed for development is underlain by sediments of very high palaeontological sensitivity. According to the CGS Map for Pretoria, the underlying geology of the development area consists of sediments of the Eccca Formation. In 2014, a desktop palaeontology assessment of the area was completed by Durand (2014). Durand (2014) notes that “The region is known for its fossiliferous mudstones and sandstones and it is highly probable that fossils will be encountered during construction if the excavations expose the bedrock. The potentially fossiliferous unit in the study area which may be impacted during construction consists of weathered sandstone.” Durand (2014) also notes that *Glossopteris* leaves are abundant in Eccca Group sediments in Gauteng, Free State, Mpumalanga and KwaZulu-Natal and could be considered to be amongst the most common fossils in South Africa. Most of the geology in the study site is presently covered by alluvium and the bedrock will only be exposed during excavations. There are large and well described collections of fossil material from this region at the Council for Geoscience and at the Bernard Price Institute for Palaeontology at the University of the Witwatersrand. SAHRIS Site 44024 is marked on Figure 3 and 3A and represents a *Glossopteris* leaf imprint in fine sandstone found ex situ. Despite the grainy nature of the sandstone, the venation pattern of the leaf is visible.” This site falls within the wetland buffer area provided. As such, no further recommendations are made in terms of impacts to palaeontological heritage resources.

**Table 4.2: Impacts of the proposed development to palaeontological resources**

<b>NATURE:</b> It is possible that buried palaeontological resources may be impacted by the proposed development in the preferred location				
		<b>Without Mitigation</b>		<b>With Mitigation</b>
<b>MAGNITUDE</b>	<b>H (10)</b>	According to the SAHRIS Palaeosensitivity Map (Figure 3.1), the area proposed for development of the PV facilities is underlain by sediments that have very high palaeontological sensitivity.	<b>H (10)</b>	According to the SAHRIS Palaeosensitivity Map (Figure 3.1), the area proposed for development of the PV facilities is underlain by sediments that have very high palaeontological sensitivity.
<b>DURATION</b>	<b>H (5)</b>	Where manifest, the impact will be permanent.	<b>H (5)</b>	Where manifest, the impact will be permanent.
<b>EXTENT</b>	<b>L (1)</b>	Limited to the development footprint	<b>L (1)</b>	Limited to the development footprint
<b>PROBABILITY</b>	<b>L (1)</b>	It is unlikely that significant fossils will be impacted	<b>L (1)</b>	It is unlikely that significant fossils will be impacted
<b>SIGNIFICANCE</b>	<b>L</b>	(10+5+1)x1=16	<b>L</b>	(10+5+1)x1=16
<b>STATUS</b>		Negative		Negative
<b>REVERSIBILITY</b>	<b>L</b>	Any impacts to heritage resources that do occur are irreversible	<b>L</b>	Any impacts to heritage resources that do occur are irreversible
<b>IRREPLACEABLE LOSS OF RESOURCES?</b>	<b>L</b>	Unlikely	<b>L</b>	Not Likely
<b>CAN IMPACTS BE MITIGATED</b>		Yes		
<b>MITIGATION:</b> The attached Chance Fossil Finds Procedure must be implemented for the duration of construction activities Should any previously unrecorded palaeontological resources be identified during the course of construction activities, work must cease in the immediate vicinity of the find, and SAHRA must be contacted regarding an appropriate way forward.				
<b>RESIDUAL RISK:</b> None				



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## 5.2 Sustainable Social and Economic Benefit

The following socio-economic benefits are anticipated in the SIA completed for this project (Barbour, 2023):

*“The construction phase is expected to extend over a period of ~18 months and create approximately 30-40 permanent employment opportunities. The total wage bill for the construction phase is estimated to be in the region of R 5 million (2023 Rand value). The majority of the employment opportunities, specifically the low and semi-skilled opportunities, are likely to be available to local residents in the area, specifically residents from Emalahleni. The majority of the beneficiaries are likely to be historically disadvantaged (HD) members of the community.*

*The capital expenditure associated with the construction phase will be in the region of R500 million (2023 Rand value). A percentage of the wage bill will also be spent in the local economy which will create opportunities for local businesses in Emalahleni. The sector of the local economy that is most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site.*

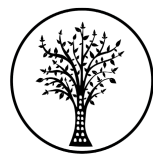
*The proposed PV SEF also creates an opportunity for Transalloys to meet its current and future energy needs with clean, renewable energy. The proposed development also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated with a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole.*

*The total number of permanent employment opportunities would be ~10-15. The majority of low and semi-skilled beneficiaries are likely to be HD members of the community.”*

As such, the anticipated socio-economic benefits to be derived from the project outweigh the anticipated negative impacts to the identified heritage resources, especially considering that neither the identified burial sites nor the identified initiation sites will be impacted by the development.

## 5.3 Proposed development alternatives

No alternatives are proposed as part of this development. No impacts to significant heritage resources are anticipated and as such, no alternatives are proposed herein.



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#### 5.4 Site Verification Statement

According to the DFFE Screening Tool analysis, the development area has Very High levels of sensitivity for impacts to palaeontological heritage and Very High levels of sensitivity for impacts to archaeological and cultural heritage resources. The results of this assessment in terms of site sensitivity are summarised below:

- The cultural value of the broader area has some significance in terms of its mining and agricultural history however none of these resources will be directly impacted (Moderate)
- Some significant archaeological resources were identified within the broader area however none of these resources will be directly impacted (Moderate)
- No highly significant palaeontological resources were identified within the development area, however the geology underlying the development area is very sensitive for impacts to significant fossils (Very High)

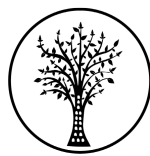
As per the findings of this assessment, and its supporting documentation, the outcome of the sensitivity verification confirms the results of the DFFE Screening Tool for Palaeontology and disputes the results of the screening tool for archaeology and cultural heritage - this should be considered to be Moderate. This evidence is provided in the body of this report.

#### 5.5 Cumulative Impacts

The cumulative impact of a development is the impact that development will have when its impact is added to the incremental impacts of other past, present or reasonably foreseeable future activities that will affect the same environment. It is important to note that the cumulative impact assessment for a particular project, like what is being done here, is not the same as an assessment of the impact of all surrounding projects. The cumulative assessment for this project is an assessment only of the impacts associated with this project, but seen in the context of all surrounding impacts. It is concerned with this project's contribution to the overall impact, within the context of the overall impact. But it is not simply the overall impact itself.

The most important concept related to a cumulative impact is that of an acceptable level of change to an environment. A cumulative impact only becomes relevant when the impact of the proposed development will lead directly to the sum of impacts of all developments causing an acceptable level of change to be exceeded in the surrounding area. If the impact of the development being assessed does not cause that level to be exceeded, then the cumulative impact associated with that development is not significant.

In REDZ areas, there is a reasonable expectation that the cultural landscape of an area will be changed to be dominated, or at least heavily altered, by renewable energy development. In fact, this is the intention of the REDZ areas.



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In terms of cumulative impacts to heritage resources, impacts to archaeological and palaeontological resources are sufficiently dealt with on a case by case basis. The primary concern from a cumulative impact perspective would be to the cultural landscape. The cultural landscape is defined as the interaction between people and the places that they have occupied and impacted. In some places in South Africa, the cultural landscape can be more than 1 million years old where we find evidence of Early Stone Age archaeology (up to 2 million years old), Middle Stone Age archaeology (up to 200 000 years old), Later Stone Age archaeology (up to 20 000 years old), evidence of indigenous herder populations (up to 2000 years old) as well as evidence of colonial frontier settlement (up to 300 years old) and more recent agricultural layers.

Modern interventions into such landscapes, such as renewable energy development, constitute an additional layer onto the cultural landscape which must be acceptable in REDZ areas. The primary risk in terms of negative impact to the cultural landscape resulting from renewable energy development lies in the eradication of older layers that make up the cultural landscape. There are various ways that such impact can be mitigated.

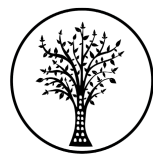
In terms of impacts to heritage resources, it is preferred that this kind of infrastructure development is concentrated in one location and is not sprawled across an otherwise agricultural landscape. The landscape within which the proposed project areas are located, is not worthy of formal protection as a heritage resource and has the capacity to accommodate such development from a heritage perspective.

As per Barbour (2023), “The potential for cumulative impacts associated with combined visibility (whether two or more solar facilities will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more solar facilities along a single journey exists. However, given the location of the site within an industrial and mining setting the significance of the impact is likely to be Low Negative. The proposed site is also located within the Emalaheni REDZ. The area has therefore been identified as suitable for the establishment of large-scale solar energy facilities and associated infrastructure.”

As such, it is not anticipated that the proposed development will have a negative cumulative impact on significant heritage resources.

## **6. RESULTS OF PUBLIC CONSULTATION**

See attached correspondence in this regard - Appendix 2.



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## 7. CONCLUSION

No new archaeological field assessment has been completed for this project as the area proposed for development has been previously thoroughly surveyed for heritage resources in 2014 and as recently as 2019. The results of the 2014 and 2019 field assessments are mapped against this proposed development in this HIA report.

All of the known heritage resources identified through previous assessments and their recommended buffer areas as well as the wetland buffer areas have been mapped in order to identify areas that are appropriate for the PV development from a heritage perspective (Figure 5). The final layout of the proposed PV area has been mapped relative to these known heritage resources. Sites 45186, 45188, 45189 and 45193 fall within the PV areas. All of these “sites” represent piles of modern debris, likely mining related, that are not conservation-worthy. Van der Walt (2019) notes that sites such as these may contain graves however this is unlikely in this instance.

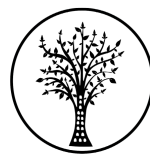
Based on the heritage information available, there is no objection to the proposed PV development as per the Final Layout provided on heritage grounds as all known significant heritage resources are avoided by the proposed development and the recommended buffers are respected.

## 8. RECOMMENDATIONS

There is no objection to the proposed development in terms of impacts to heritage resources on condition that:

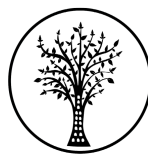
- The Heritage Management Plan proposed by Van Vollenhoven in 2014 be drafted to cover the ongoing conservation and management of the burial ground identified as well as the initiation sites for the duration of the Construction and Operational Phases.
- The attached Chance Fossil Finds Procedure is implemented for the duration of construction activities
- Should any buried archaeological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. The South African Heritage Resources Agency (SAHRA) must be contacted immediately in order to determine an appropriate way forward.





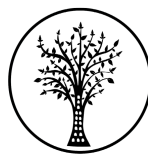
9. REFERENCES

Heritage Impact Assessments				
NID	Author(s)	Date	Type	Title
137998	Heritage Impact Assessment Specialist Reports	Shahzaadee Karodia Khan		Notification of Intent to Develop: Environmental Impact Assessment (EIA) for an Integrated Waste Management License at the Landau Colliery
138001	HIA Letter of Exemption	Shahzaadee Karodia Khan	25/10/2013	Letter of Request for Exemption from a HIA for the EIA required for an Integrated Waste Management Licence at the Landau Colliery
145878	Archaeological Specialist Reports	Jaco van der Walt	01/11/2013	Archaeological Scoping Report for the Proposed Establishment of the Transalloys Coal-Fired Power Plant near Witbank, Mpumalanga Province
145884	PIA Desktop	Barry Millstead	01/11/2013	Desktop Palaeontological Heritage Impact Assessment Report on the site of the Proposed Transalloys (Pty) Ltd's Power Station to be Location within Portions 25, 26, 33, 34, 35, 36 and 37 of the Farm Elandsfontein 309 JS and Portions 20, 24 and 38 of the Farm Schoongezicht 308 JS, Mpumalanga Province
160495	HIA Phase 1	Anton van Vollenhoven	07/03/2014	<b>A REPORT ON A CULTURAL HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT AT TRANSALLOYS ON PORTIONS 34 AND 35 (PORTION OF PORTION 34) OF THE FARM ELANDSFONTEIN 309 JS AND PORTIONS 20 AND 24 OF THE FARM SCHOONGEZICHT 308 JS, CLOSE TO EMALAHLENI, MPUMALANGA PROVINCE</b>
163515	PIA Desktop	JF Durand	26/04/2014	<b>Palaeontology Scoping Report: PROPOSED ESTABLISHMENT OF POLLUTION CONTROL DAMS AT TRANSALLOYS IN CLEWER NEAR EMALAHLENI (WITBANK), MPUMALANGA</b>
168452	AIA Phase 1	Jaco van der Walt	29/06/2014	Archaeological Impact Assessment For the proposed Clay and Coal Mining project on a Portion of Portion 2 of the Farm Weltevreden 324 JS, Magisterial District of Witbank
169649	PIA Desktop	JF Durand	30/06/2014	DESKTOP STUDY PALAEONTOLOGY: PROPOSED ESTABLISHMENT OF POLLUTION CONTROL DAMS AT TRANSALLOYS IN CLEWER NEAR EMALAHLENI (WITBANK), MPUMALANGA
169649	PIA Desktop	JF Durand	30/06/2014	DESKTOP STUDY PALAEONTOLOGY: PROPOSED ESTABLISHMENT OF POLLUTION CONTROL DAMS AT TRANSALLOYS IN CLEWER NEAR EMALAHLENI (WITBANK), MPUMALANGA
174912	Heritage Statement	Justin du Piesanie	15/09/2014	Notification of Intent to Develop for the Klipspruit Extension Weltevreden Project



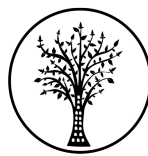
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259292	Archaeological Specialist Reports	Jaco van der Walt	04/08/2014	AIA for the Proposed Transalloys Coal-Fired Power Plant
268555	HIA Phase 1	Justin du Piesanie, Johan Nel	30/01/2015	Environmental Authorisation for the KPSX Weltevreden Project: Heritage Impact Assessment
273298	AIA Phase 1	Jaco van der Walt	26/05/2015	Archaeological Impact Assessment Doornrug
274551	HIA Phase 1		11/01/2015	A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR ANGLO OPERATIONS LIMITED GREENSIDE COLLIERY'S NEW DISCARD FACILITY NEAR EMAHLALENI ON THE EASTERN HIGHVELD IN THE MPUMALANGA PROVINCE
274553	PIA Phase 1		11/01/2015	Greenside Colliery New Discard Facility eMalahleni Local Municipality, Mpumalanga Province Farm: Portion 0, 2 and 3 Groenfontein 331JS. Palaeontological Impact Assessment: Phase 1 Field study
274558	HIA Phase 1		15/05/2015	A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE PROPOSED LANDAU COLLIERY NAVIGATION SECTION UMLALAZI SOUTH BLOCK EXTENSION PROJECT NEAR EMAHLALENI (WITBANK) ON THE EASTERN HIGHVELD IN THE MPUMALANGA PROVINCE
345587	Palaeontological Specialist Reports	Dr Heidi Fourie	16/11/2015	Landau Colliery: Proposed Navigation West-South Block Extension Project Nkangala District Municipality, eMalahleni Local Municipality, Mpumalanga Province
356304	HIA Phase 1	Anton van Vollenhoven	29/05/2015	A Report on a Heritage Impact Assessment for the Proposed Klarinet Phase 2 Residential Development, close to eMalahleni, Mpumalanga Province.
356306	PIA Phase 1	Dr. Heidi Fourie	19/05/2015	Palaeontological Impact Assessment: Phase 1 Field Study. Klarinet Phase 2, eMalahleni Local Municipality, Mpumalanga Province. Farm: Various Portions of Blesboklaagte 296 JS and Portion of Erf 5017 Klarinet X7.
356363	AIA Phase 1	Jaco van der Walt	21/01/2016	Archaeological Impact Assessment for the proposed processing project on Portion 30 and Portion 42 of the Farm Doornrug 302 JS, Balmoral District, Mpumalanga Province.
6277	AIA Phase 1	Thomas Huffman	31/10/1999	Archaeological Survey of Blesboklaagte, Witbank
6516	AIA Phase 1	Udo Kusel	24/11/2006	Cultural Heritage Resources Impact Assessment on Holding 23 of Dixon Agricultural Holding Witbank Mpumalanga
8269	AIA Phase 1	McEdward Murimbika	01/11/2008	Phase 1 Archaeological and Heritage Impact Assessment specialist study report. Proposed construction of a new 132 KV deviation power line to link



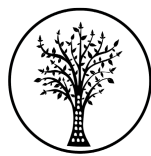
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				Wilge Substation to a new Bravo Substation in Emalahleni local Municipality, Nkangala District, Mpumalanga
323795	Heritage Impact Assessment Specialist Reports		31/03/2014	Cultural Heritage Impact Assessment Report for the Proposed SANRAL Thabong Interchange Development, Welkom Region, Free State Province
384235	AIA Phase 1	Lloyd Rossouw	30/09/2016	Phase 1 Archaeological Impact Assessment of a proposed new water pipeline and associated infrastructure between Ventersburg and the Koppie Alleen pump station, FS Province
384495	Heritage Scoping	Nkosinathi Godfrey Tomose	20/12/2016	Heritage Scoping Study for the Proposed Prospecting Rights Application on Farms Adamsons Vley 655, Jonkers Rust 72, Du Preez Leger 324 and Stillewoning 703
524807	<b>Heritage Impact Assessment Specialist Reports</b>	<b>Jaco van der Walt</b>	<b>31/03/2019</b>	<b>Heritage Impact Assessment for the Transalloys Power Plant Part II Amendment, Mpumalanga Province</b>



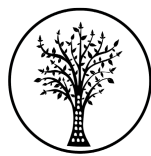
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## APPENDICES



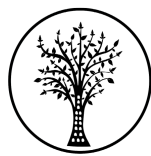
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## APPENDIX 1: Heritage Screening Assessment (2022)



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## APPENDIX 2: Correspondence regarding PPP



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### **APPENDIX 3: Chance Fossil Finds Procedure**